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SEP 27 1999

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Mr. James A. Saric, Remedial Project Manager
U.S. Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE-1141-99

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF RESPONSES TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY AND OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE LEACHATE CONVEYANCE SYSTEM LEAK INVESTIGATION REPORT

References: 1) Letter, T. Schneider, OEPA to J. Reising, DOE-FEMP, "Comments on LTS Leak Investigation Report," dated June 9, 1999

2) Letter, J. Saric, U.S. EPA, to J. Reising, DOE-FEMP, "Leachate System Investigation Report," dated May 25, 1999

This letter transmits the responses to comments received on the On-Site Disposal Facility (OSDF) Leachate Conveyance System (LCS) Leak Investigation Report and the Evaluation of Leachate Transmission System Report (by Geosyntec).

If you have any questions or would like to further discuss this submittal, please contact Jay Jalovec at (513) 648-3122.

Sincerely,

Johnny Reising

FEMP:Jalovec

Johnny W. Reising
Fernald Remedial Action
Project Manager

Enclosure

1.

cc w/enclosure:
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G. Jablonowski, USEPA-V, SRF-5J
T. Schneider, OEPA-Dayton (three copies of enclosures)
F. Bell, ATSDR
M. Schupe, HSI GeoTrans
R. Vandegrift, ODH
F. Barker, Tetra Tech
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J. Chiou, FDF/52-0
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S. Hinnefeld, FDF/31
J. Hughes, FDF/52-5
U. Kumthekar, FDF/64
T. Walsh, FDF/65-2
ECDC, FDF/52-7

RESPONSES TO U.S. ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE ON-SITE DISPOSAL FACILITY LEACHATE TRANSMISSION SYSTEM LEAK INVESTIGATION REPORT

Commenting Organization: U.S. EPA Commentor: Saric
Original Comment #: 1

Comment: Hydrostatic Testing Procedure: The 6-inch-diameter carrier pipe's becoming oval during hydrostatic testing was caused by use of a procedure that was not designed for a dual-pipe configuration. In addition, the procedure used for testing the containment pipe was not adequately documented. When conducting hydrostatic tests in the future, the Construction Quality Assurance (CQA) engineer should ensure that the procedure used during field testing is thoroughly documented.

Response: GeoSyntec developed a procedure for hydrostatic testing dual containment pipe. To ensure this procedure is used in the field, Fluor Daniel Fernald (FDF) Quality Assurance (QA) will oversee and document each hydrostatic test to verify each step of the procedure is being followed.

Action: FDF QA oversee and document each hydrostatic test as noted in the response.

Commenting Organization: U.S. EPA Commentor: Saric
Original Comment #: 2

Comment: Electrofusion Coupling: Three of the four documented leaks were found at pipe locations where electrofusion coupling was used. Electrofusion coupling is not as effective as butt-welding of high-density polyethylene pipes and should not be used. If electrofusion coupling is unavoidable at certain locations in the future, care should be taken to follow CQA procedures, and only personnel having specialized experience in electrofusion coupling should be used.

Response: This comment is similar to Ohio EPA Comment 5. Please see response to Ohio EPA Comment 5.

Action: See action on Ohio EPA Comment 5.

Commenting Organization: U.S. EPA Commentor: Saric
Original Comment #: 3

Comment: Design Changes in Selection of Materials: Numerous design changes were prepared during construction on the leachate transmission line. However, during construction, insufficient attention was given to the impacts of these changes on system performance. A method of identifying design changes that affect system performance should be developed, and substantive design changes should be thoroughly reviewed by the design engineer and regulatory agencies.

Response: Agree. The On-Site Disposal Facility (OSDF) and OSDF Leachate Conveyance System (LCS) typical change control flow will be as follows:

1. When any activity that needs to be performed is not explicitly stated in the specifications or indicated on the Certified for Construction (CFC) drawings, a Request for Clarification of Information (RCI) will be generated.

2. The RCI is submitted to the Design Organization and the FDF Project Engineer (PE).

3. The Design Organization reviews the RCI and responds with the proper technical information. If the RCI results in changes to the design (fit, form or function), the RCI is upgraded to a Design Change Notice (DCN).

4. The Design Organization reviews the DCN for a valid basis for a design/installation change. If a change is justifiable, the Design Organization provides the proper technical information, drawings, etc and approves the DCN. If the change is not approved, the Design Organization prepares a response document outlining justification for disapproval.

5. If approved, the FDF PE reviews the response and verifies that all required reviews are complete.

6. The FDF reviewed and Design Organization approved DCN will be sent to the regulators for review and approval prior to initiation of changes.

7. If approved, the FDF PE signs the document verifying that all reviews are complete and the change is incorporated. Following completion of the work the FDF PE will verify the work was completed per the requirement of the DCN.

Action: Provide OSDF and OSDF LCS DCNs to the regulators, as noted in the response.

Commenting Organization: U.S. EPA Commentor: Saric
Original Comment #: 4

Comment: Pipe Installation: During future installation activities, pipes should be laid in such a way that butt-welding of the pipe is possible. Also, equipment working in the vicinity of the pipes should be monitored to prevent damage to the pipes. Moreover, hydrostatic testing of pipe joints should be completed before the pipe trench is backfilled or a soil cover is placed over the pipes.

Response: Agree. Piping will be placed to maximize the use of butt-fusion welding (Refer to response to Ohio EPA Comment 5). Proper operation of equipment and adherence to procedures will be emphasized with personnel involved in construction of piping to minimize the potential for damage to piping (Also, refer to response to Ohio EPA Comment 2). Piping will be pneumatically pre-tested at 5 psi with the inner pipe pressurized and all joints will be soaped and accepted prior to the pipe being placed in the trench and/or backfilled. Per specification, the contractor will perform a final hydrostatic test of the pipe before (1-hour pressure test) or after (3-hour pressure test) the pipe is backfilled. If the pipe is tested before backfilling, then a test after backfilling may be used as an additional check on pipe integrity.

Action: Emphasize proper operation of equipment and adherence to procedures, and perform pipe testing, as noted in the response.

RESPONSES TO OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE ON-SITE DISPOSAL FACILITY (OSDF) LEACHATE CONVEYANCE SYSTEM (LCS) LEAK INVESTIGATION REPORT

LEAK INVESTIGATION REPORT

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 7 of 16 Line #: Code: c
Original Comment #: 1
Comment: The DCN and RCI processes are both designed to facilitate changes to contracts between FDF and its subcontractors. It has not proved to work satisfactorily in making changes to design documents that have been approved by the regulators. We need a process that allows Agency review and written approval of all DCNs that change plans which are deliverables under approved Remedial Action Work Plans. We are willing to be flexible and we can expedite our reviews. In certain cases it may be possible to transmit approvals by facsimile.

Until a mutually agreeable process is worked out, no DCNs should be considered to be approved by Ohio EPA unless it has been received in writing.

Response: Agree. See response to U.S. EPA Comment 3.

Action: See action on U.S. EPA Comment 3.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.4 Pg #: 8 of 16 Line #: Code: c
Original Comment #: 2
Comment: The Ohio EPA reviewed and approved the Phase I CQA Report. We acknowledged that the LCS had been built in accordance with the approved design and that all quality control and quality assurance requirements had been satisfactorily performed. Despite the best efforts of many well trained and highly motivated people, the system failed to perform as designed. One of the lessons to be learned is that CQA/CQC oversight cannot substitute for a failure to achieve a high level of workmanship. A culture that nourishes and promotes personal pride in workmanship is necessary too before systems will perform as intended over a 200 year design life. Developing this culture is hard enough within a given organization. The possibility that it can be developed within a sub-contracted organization is even more problematic. Another important component of the OSDF, the geosynthetic liner, is also installed by a sub-contractor to the OSDF construction contractor. Even a casual observer of the Cell 1 secondary geosynthetic liner could easily see the difference in the number of patches needed by the two sub-contractors. The Ohio EPA is available at all times to participate in the continuing development of this culture.

Response: Comment acknowledged. Prior to each defined work activity, FDF will align with the contractors to review the requirements for acceptable work. FDF will monitor work as it is in progress and document activities in a daily report to ensure the contractor understands work procedures and commits to quality workmanship. If the work process or quality requirements for the defined work activity must change, the change will be

reviewed by Engineering and, if the change is approved, will be converted to a Design Change Notice (DCN) or Page Change Notice. The intent of the design change will be reviewed with the Contractor and the Contractor's work will be monitored by QA to ensure the changes are incorporated into the work activity.

Action: FDF will align with contractors prior to work activity, monitor work, and ensure design changes are incorporated into the work activity, as noted in the response.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.5 Pg #: 9 of 16 Line #: Code: c
Original Comment #: 3

Comment: The report does not provide an estimate of the volume of leachate that leaked from the line into either the manholes or the environment.

Response: Comment acknowledged. The Department of Energy (DOE) acknowledges that it is possible some leachate may have reached the environment as a result of the leaks identified in the LCS. An estimate of an amount of leachate that potentially leaked from the line into either manholes or the environment could not be made (refer to Ohio EPA Comment 11 and associated response). DOE has evaluated the potential impact of this leakage on the environment, as summarized below, and concluded the impact was negligible.

The manhole served as secondary containment for the leachate and did not provide a means for the liquid to escape into the environment. The liquid collected there was directed to the Advanced Wastewater Treatment (AWWT) system.

As for leakage that may have reached the environment through the two identified containment pipe leaks described below, it can be concluded that the impact of such leakage was negligible. This conclusion is based on radiological surveys of, and soil samples from the excavated areas. Radiological surveys were conducted during the excavation. These surveys showed no radioactivity above background levels. Soil samples were also collected to determine if leachate had been released into the environment. The soil was sampled at the excavations where leaks would have been most likely to occur based on pipe installation records and observations made during field investigations. Analytical results of the soil samples showed no indication of contamination in the environment.

The soil sampling data was submitted to the agencies as part of the Area 1, Phase II (A1PII) Sector 2B Certification Report, dated May 5, 1999 (20710-RP-0010, Revision A) and is also provided in Table 1 (attached). Section 5.3 of the A1PII Sector 2B Certification Report describes that samples were taken from four open excavations, as part of the Leachate Line investigation and that all results were below the respective Final Remediation Level (FRL).

The soil samples were taken in Excavations 1 through 4. The samples were taken from the wall of each excavation from the clay layer just below the sand fill 6 to 12 inches beneath the pipe line. Refer to Figure 4-1 from the GeoSyntec Report (attached) for the locations of the excavations.

The Leak Investigation Report identified four leaks. Leak 1 was at a 10-inch electrofusion coupling on the containment pipe located in Excavation 2. Leak 2 was at a 6-inch electrofusion coupling on the carrier pipe located in Excavation 3. Leak 3 was a tear in the 10-inch containment pipe wall located in Excavation 4. Leak 4 was at a 6-inch electrofusion coupling on the carrier pipe located in Excavation 3. No leaks were identified in Excavation 1 nor in Excavation 5.

The analytical results for the soil samples from the excavations were either undetected or at background levels for all parameters analyzed. Uranium, boron, and total organic carbon were detected at background levels in all four excavations sampled (Excavations 1, 2, 3, and 4). There were no leaks identified in Excavations 1 and 5, and the two leaks identified in Excavation 3 were on the carrier pipe and not on the containment pipe, so there would be no leakage to the environment in Excavations 1, 3, or 5. Excavations 2 and 4 involved leaks detected on containment pipe. Uranium values were 2 parts per million (ppm) dry for Excavation 2 and 1 ppm dry for Excavation 4, which are within background levels. A uranium value of 6 ppm was obtained for Excavation 1, but there were no leaks identified in Excavation 1 and the value is on the upper edge of expected background. Boron was 3 milligrams per kilogram (mg/kg) for both Excavations 2 and 4, which is within expected background levels. Total organic carbon is a non-specific analysis indicating carbon in the soil. The specific analyses of organic constituents in Table 1 (attached) were all undetected, as indicated by the U Qualifier.

Action: No action required.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 5.1 Pg #: 15 of 16 Line #: Code: c
Original Comment #: 4
Comment: During the repairs to the temporary gravity line and construction of the interim gravity line, written procedures were developed for the hydrostatic testing of the HDPE lines.

Response: Written procedures for hydrostatic testing of the original leachate gravity line were approved prior to construction as part of the required submittals for the project. However, these methods addressed testing of a single pipe only and did not apply to a dual containment system. New procedures for testing dual pipe systems were developed during the repairs of the temporary gravity line for use during the interim pipe installation and will be used for future dual containment pipe installation.

Action: No action required.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 5.2 Pg #: 15 of 16 Line #: Code: c
Original Comment #: 5
Comment: This discussion of lessons learned about electrofusion couplings does not go far enough to prevent similar problems in the future. The Ohio EPA will not approve the use of electrofusion couplings on future projects for the following reasons:

1) Electrofusion couplings are not robust under field conditions. Skin oils, traces of dirt, moisture in even trace amounts can all cause failures of the joint.

2) The couplings are controlled by a "black box" and failure modes are not always revealed by the machine.

3) It is possible to design piping systems that do not require couplings. By sequencing the construction so that there are always moveable lengths of pipe, butt fusion joints can be used in virtually every situation.

4) If proper planning and sequencing (or repairs to the system) do not permit the use of butt fused joint, an extrusion-welded sleeve can always be used instead of a coupling.

Response: Future contractual documents will maximize the use of butt-fusion welds and preclude the use of electrofusion couplings, except for connecting perforated pipe upstream of the liner penetration boxes within the drainage corridor of the OSDF liner system. DCN 20102-085 allows the use of electrofusion couplings upstream (that is, within the cell) of the liner penetration boxes. Per Ohio EPA memorandum (Reference: Memorandum, Tom Ontko to Jyh-Dong Chiou, "OSDF DCNs 20102-085, 20102-091, 20102-092," dated September 8, 1999), the use of electrofusion couplings to connect lengths of perforated pipes within the drainage corridor is approved. Electrofusion couplings may be used upstream of the liner penetration boxes, because of lack of access to perform a fusion weld, ease of construction, and because the perforated pipe is designed to allow liquid into the pipes within the drainage layer of the OSDF liner system. Electrofusion couplings will not be used for the LCS pipe or redundant LCS pipe where these pipes penetrate the Leak Detection System (LDS) drainage layers. Only personnel having specialized experience in electrofusion coupling installation will perform these installations. Care will be taken to follow CQA procedures and the electrofusion couplings will pass required quality testing prior to placement into operation.

A situation may also arise where an extrusion welded sleeve is required. For example, in a case where a fixed-end connection is required an extrusion welded sleeve will be allowed. Written approval of the FDF Project Engineer (PE) and Construction Manager (CM) will be required to assure an extrusion welded sleeve is needed.

Action: Maximize the use of butt-fusion welds, use electrofusion couplings only to connect perforated pipe upstream of the penetration boxes, and allow extrusion welded sleeves only with written approval of the FDF PE and CM, as noted in the response.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 5.3 Pg #: 16 of 16 Line #: Code:
Original Comment#: 6

Comment: We agree that the Engineer of Record should be evaluating significant changes to the OSDF design. It is our understanding that past practice has been to allow the GeoSyntec project manager to determine when the Engineer of Record should be consulted on proposed changes to the design. As part of a re-evaluation of the DCN process, this strategy should be revisited to assess if the significant changes are actually being forwarded to the Engineer of Record for his review.

Response: Agree. See response to U.S. EPA Comment 3.

Action: See action on U.S. EPA Comment 3.

Commenting Organization: Ohio EPA Commentor: HSI GeoTrans
Section #: Appendix B Pg #: B-3 Item #: 4 Code: c
Original Comment #: 7

Comment: The equation that is used in this calculation is for pipe that is fully supported by surrounding soil, which is not the case for the 6-inch diameter carrier pipe. Rather than this equation, Chart 14 on Page 25 of the Driscopipe System Design Manual should have been used. This chart identifies the allowable pressure on an unsupported pipe. This chart indicates that the 6-inch SDR 26 pipe would buckle with an exterior pressure of only 8 psi, which is far less than the 17.2 psi that was calculated to be the critical pressure.

Response: Agree. In either case, the method used to determine the critical buckling capacity results in a value very near to the test pressure originally applied on the pipe. Thus, the SDR 26 pipe can be expected to start to deform to an oval shape.

In the future this issue will be moot, because SDR 26 piping will be removed and SDR 11 pipe will be installed throughout per agreement. SDR 11 pipe has a critical buckling capacity approximately one hundred times greater than SDR 26 pipe. In addition, the revised test procedures for dual pipe will be used to avoid buckling of carrier pipe.

Action: Future designs will incorporate SDR 11 pipe and testing will be conducted using procedures developed for dual pipe systems.

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Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.6 Pg #: 26 Line #: 2nd paragraph Code: c
Original Comment #: 8

Comment: This paragraph refers to preliminary testing of the LCS line that was performed by the construction contractor. This preliminary testing was not required by any approved plans, was not carried out according to an approved plan and the test pressures used were poorly documented. It is likely that some of the out-of-round conditions of the carrier pipe were caused by this unauthorized testing. Procedures need to be developed so that complex systems like dual-containment piping are not subjected to seemingly harmless practices that could inadvertently damage them. The construction contractor should conduct all activities in accordance with either approved plans or standard operating practices. The CQC contractor is authorized to review and approve all deviations and additions to those activities.

Response: A procedure for preliminary pneumatic testing is included in Appendix J of the Leak Investigation Report. In addition, revised CQA monitoring requirements for pressure testing are included in Appendix K of the report. See response to Ohio EPA Comment 7.

Action: See action on Ohio EPA Comment 7.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.7 Pg #: 27 Line #: 3rd line Code: c
Original Comment #: 9
Comment: The text states that the pressure testing was accomplished by first filling the pipe of interest from the *upstream* end with water. That may be the case but the interim gravity line is being tested by filling from the *downstream* end. This makes more practical sense because when filling from the upstream end you are trying to push water into the same valve that air is being forced out of.

Response: The revised test procedure included in Appendix J of the Leak Investigation Report requires filling from the "downstream" end. This requirement was included in the procedure to facilitate filling the pipe as pointed out in the comment.

Action: No action required.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.7 Pg #: 29 Line #: 1st complete paragraph Code: c
Original Comment #: 10
Comment: It is unclear why the test of the container pipe from MH-3 to the PLS was allowed to continue after the observation of the slow leak at the fixed-end seal. A 2.4 psi pressure drop was observed during the 3 hour test. This is the largest pressure drop that was deemed acceptable in testing the temporary system. In most cases, a pressure drop of 0.1 psi per hour was the largest leak that was judged to be acceptable. In retrospect, the test should have been deemed invalid when the leak was first observed and a new test should have been started after the fixed-end seal was repaired.

The observations here are consistent with the leak in the carrier pipe observed at Excavation 4. It was never clear why a pipe that was punctured during initial covering could have passed a pressure test. The answer appears to be that the hole was plugged almost perfectly by the clay bedding material. (The specification called for the pipe to be bedded in sand.) Tiny leaks from the puncture at Excavation 4 could have been masked by the leak at the fixed-end seal.

Response: The test was allowed to continue because the pressure drop coincided with the occurrence of the leak in the fixed-end seal and the pressure drop was attributed to this specific leak.

Action: Utilize revised test procedures.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.2 Pg #: 45 Line #: Code:
Original Comment #: 11
Comment: The deficiencies in the inspections and records do not allow a determination of when the LCS began leaking or the volume of the leachate that leaked from the carrier pipe and into the containment pipe.

Response: The responsibility for inspection, monitoring, and record keeping of the Leak Transmission System (LTS) system has been transferred to the FDF Aquifer Restoration/Wastewater Project (ARWWP), since the Leak Investigation Report was submitted. The Systems Plan has been upgraded by ARWWP to address these issues

and the EPAs are reviewing Fernald Environmental Management Project responses to their comments on the redrafted Systems Plan. A significant improvement in these activities has occurred as a result of the transfer. The improvements include performing daily measurements, which are designed to provide information to ascertain leakage on a more timely basis in the future.

Action: Conduct required inspections, monitoring, and record keeping as noted in the revised Systems Plan. Submit revised plan to regulators for approval.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 7.5 Pg #: 85 Line #: 1st bullet, reason (ii) Code: c
Original Comment #: 12
Comment: The text cites contractor preference as a reason for the large number of eletrofusion couplings. In general, contractor preference is a valid reason for choosing one course of action over another when the two actions yield equivalent results. Knowing what we know now, couplings are not equivalent to butt-fused joints. In the future, contractual documents should be written so that contractors are not allowed to choose an inferior course of action over one which has proven to be superior.

Response: Refer to the response to Ohio EPA Comment 5.

Action: See action on Ohio EPA Comment 5.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 8.1 Pg #: 89 Line #: 2nd bullet Code: c
Original Comment #: 13
Comment: As stated in a previous comment, the Ohio EPA believes that the final pressure test referenced here was actually inconclusive.

Response: See response to Ohio EPA Comment 10.

Action: See action on Ohio EPA Comment 10.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 8.2 Pg #: 92 Line #: 1st bullet Code: c
Original Comment #: 14
Comment: This is not the only instance in which the Systems Plan was not followed. With the drain port open as in the design, it is not clear how the carrier pipe could be checked for leaks. With the drain port closed, the entire 2800 odd feet of container pipe has to fill before excess leachate flows from the weep holes into MH-3. The leachate then has to be observed in the bottom of MH-3 and identified as leachate (and not as rain water infiltration through the leaky seals of the manhole lid) before it can be determined that the carrier pipe leaks.

The Ohio EPA did a cursory review of Petro daily logs and could not find a record indicating that the carrier pipe was drained after it was pressure tested. Add that uncertainty to the unknown amount of leachate that was incorrectly dismissed as rain water, and it seems impossible to determine even approximately the volume of leachate that leaked from the carrier pipe. Given that the container pipe was also breached, we have no way to estimate if any leachate escaped into the environment. Our only way to

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estimate environmental releases is direct observation during the excavation of the temporary line. The Ohio EPA did not observe saturated soils that we were able to attribute to environmental releases of leachate.

Response: See response to Ohio EPA Comment 11.

Action: See action on Ohio EPA Comment 11.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 9.2 Pg #: 102 Line #: 1st bullet Code: c
Original Comment #: 15
Comment: Please elaborate on the rationale for monitoring the containment pipes after a 0.25-inch rainfall in a 24-hour period. The organization newly charged with monitoring the system balked at checking after rainfall and we could not persuasively argue the point. The Systems Plan as newly drafted does not have this requirement.

Response: A weekly monitoring frequency is first required in this bullet. The requirement for monitoring after storm events was added to check on the system during periods of increased LTS flow to identify any leaks which may occur between weekly monitoring events. The 0.25-inch rainfall was selected as significant based on GeoSyntec's experience and observations on the magnitude of rainfall that may increase the leachate generation rate in a landfill cell to a level which would result in additional flow to the LTS. The newly drafted Systems Plan requires daily monitoring instead of weekly monitoring. Therefore, the requirement to monitor after storm events is no longer required and was not included.

Action: See action on Ohio EPA Comment 11.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 9.4 Pg #: 103 Line #: Code: c
Original Comment#: 16
Comment: We agree with the advantages of thicker-walled pipe over SDR 26 pipe as listed here. However, we believe that these advantages also apply to SDR 11 over SDR 17. Consensus was achieved during the preliminary design of the interim gravity system that the advantages of SDR 11 pipe greatly outweighed the negligible increase in cost.

Response: Note the value recommended is a maximum and does not preclude the use of SDR 11 HDPE pipe. Therefore, our agreement to use SDR 11 for the interim gravity line meets this requirement.

Action: No action required.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 9.5 Pg #: 104 Line #: Code:
Original Comment #: 17
Comment: Construction of the interim gravity line is being accomplished without the use of either electrofusion couplings or sleeves. With proper planning and using stubs on fixed ends that are long enough, the butt fusion equipment can be used when joining lengths of pipe to fixed structures such as the permanent lift station.

Response: See response to Ohio EPA Comment 5.

Action: See action on Ohio EPA Comment 5.

TABLE 1
Soil Sample Results [1]

Excavation	Leak	Leak Type	Sample ID	Parameter	On-Property FRL [2]	Result	Qualifier [3,4]
Excavation 1	None	None	LCS LEAK #1 [5]	1,1-Dichloroethene	0.41 mg/kg	0.01 mg/kg	U
				Bromodichloromethane	4.0 mg/kg	0.01 mg/kg	U
				Tetrachloroethene	3.6 mg/kg	0.01 mg/kg	U
				Trichloroethene	25 mg/kg	0.01 mg/kg	U
				Vinyl chloride	0.13 mg/kg	0.01 mg/kg	U
				cis-1,2-Dichloroethene	-	0.01 mg/kg	U
				trans-1,2-Dichloroethene	-	0.01 mg/kg	U
				Boron	7400 mg/kg	3 mg/kg	-
				Mercury	7.5 mg/kg	0 mg/kg	B
				Moisture Content	-	15 Percent	-
				Technetium-99	30 pCi/g	1 pCi/g dry	U
				Uranium, Total [6]	82 ppm	6 ppm dry	-
				4-Nitroaniline	150 mg/kg	0.84 mg/kg	U
				Carbazole	12 mg/kg	0.33 mg/kg	U
				Chlordane	0.19 mg/kg	0.002 mg/kg [7]	U
				bis(2-Chloroisopropyl) ether	420 mg/kg	0.33 mg/kg	U
				Extractable Organic Halogen	-	20 mg/kg	U
				Total Organic Carbon	-	5550 mg/kg	-
Excavation 2	Leak 1	Containment pipe at 10-inch electrofusion coupling	LCS LEAK #2 [8]	1,1-Dichloroethene	0.41 mg/kg	0.01 mg/kg	U
				Bromodichloromethane	4.0 mg/kg	0.01 mg/kg	U
				Tetrachloroethene	3.6 mg/kg	0.01 mg/kg	U
				Trichloroethene	25 mg/kg	0.01 mg/kg	U
				Vinyl chloride	0.13 mg/kg	0.01 mg/kg	U
				cis-1,2-Dichloroethene	-	0.01 mg/kg	U
				trans-1,2-Dichloroethene	-	0.01 mg/kg	U
				Boron	7400 mg/kg	3 mg/kg	-
				Mercury	7.5 mg/kg	0 mg/kg	B
				Moisture Content	-	16 Percent	-
				Technetium-99	30 pCi/g	1 pCi/g dry	U
				Uranium, Total	82 ppm	2 ppm dry	-

TABLE 1
Soil Sample Results [1]
(Continued)

Excavation	Leak	Leak Type	Sample ID	Parameter	On-Property FRL	Result	Qualifier
Excavation 2 (continued)				4-Nitroaniline	150 mg/kg	0.84 mg/kg	U
				Carbazole	12 mg/kg	0.33 mg/kg	U
				Chlordane	0.19 mg/kg	0.002 mg/kg	U
				bis(2-Chloroisopropyl) ether	420 mg/kg	0.33 mg/kg	U
				Extractable Organic Halogen	-	20 mg/kg	U
				Total Organic Carbon	-	11800 mg/kg	-
Excavation 3	Leak 2	Carrier pipe at 6-inch electrofusion coupling	LCS LEAK #3 [9]	1,1-Dichloroethene	0.41 mg/kg	0.01 mg/kg	U
				Bromodichloromethane	4.0 mg/kg	0.01 mg/kg	U
				Tetrachloroethene	3.6 mg/kg	0.01 mg/kg	U
				Trichloroethene	25 mg/kg	0.01 mg/kg	U
				Vinyl chloride	0.13 mg/kg	0.01 mg/kg	U
	Leak 4	Carrier pipe at 6-inch electrofusion coupling		cis-1,2-Dichloroethene	-	0.01 mg/kg	U
				trans-1,2-Dichloroethene	-	0.01 mg/kg	U
				Boron	7400 mg/kg	2 mg/kg	-
				Mercury	7.5 mg/kg	0 mg/kg	U
				Moisture Content	-	24 Percent	-
				Technetium-99	30 pCi/g	1 pCi/g dry	U
				Uranium, Total	82 ppm	2 ppm dry	-
				4-Nitroaniline	150 mg/kg	0.84 mg/kg	U
				Carbazole	12 mg/kg	0.33 mg/kg	U
				Chlordane	0.19 mg/kg	0.002 mg/kg	U
				bis(2-Chloroisopropyl) ether	420 mg/kg	0.33 mg/kg	U
				Extractable Organic Halogen	-	20 mg/kg	U
				Total Organic Carbon	-	2210 mg/kg	-
Excavation 4	Leak 3	Containment pipe - tear in 10-inch pipe wall	LCS LEAK #4 [10]	1,1-Dichloroethene	0.41 mg/kg	0.009 mg/kg	U
				Bromodichloromethane	4.0 mg/kg	0.009 mg/kg	U
				Tetrachloroethene	3.6 mg/kg	0.009 mg/kg	U
				Trichloroethene	25 mg/kg	0.009 mg/kg	U
				Vinyl chloride	0.13 mg/kg	0.009 mg/kg	U

TABLE 1
Soil Sample Results [1]
(Continued)

Excavation	Leak	Leak Type	Sample ID	Parameter	On-Property FRL	Result	Qualifier
Excavation 4 (continued)				cis-1,2-Dichloroethene	-	0.009 mg/kg	U
				trans-1,2-Dichloroethene	-	0.009 mg/kg	U
				Boron	7400 mg/kg	3 mg/kg	-
				Mercury	7.5 mg/kg	0 mg/kg	U
				Moisture Content	-	16 Percent	-
				Technetium-99	30 pCi/g	1 pCi/g dry	U
				Uranium, Total	82 ppm	1 ppm dry	-
				4-Nitroaniline	150 mg/kg	0.84 mg/kg	U
				Carbazole	12 mg/kg	0.33 mg/kg	U
				Chlordane	0.19 mg/kg	0.002 mg/kg	U
				bis(2-Chloroisopropyl) ether	420 mg/kg	0.33 mg/kg	U
				Extractable Organic Halogen	-	20 mg/kg	U
				Total Organic Carbon	-	14500 mg/kg	-
Excavation 5 [11]	None	None		None			

(1) Sample identifications and data results are from the draft Certification Report for Area 1, Phase II Sector 2B, dated May 1999 (20710-RP-0010, Draft Revision A).
(2) Final Remediation Level (FRL)
(3) Qualifier U stands for undetected result at the stated limit of detection.
(4) Qualifier B means the reported value was obtained from a reading that was less than the Contract Required Detection Limit, but greater than or equal to the Instrument Detection Limit.
(5) Sample ID LCS LEAK #1 corresponds to Excavation 1. No leaks were identified in Excavation 1.
(6) The on-site FRL for Uranium is 82 ppm with the exception of the Former Production Area (20 ppm).
(7) Results for alpha-chlordane
(8) Sample ID LCS LEAK #2 corresponds to Excavation 2. Leak 1 at a 10-inch electrofusion coupling on the containment pipe was identified in Excavation 2.
(9) Sample ID LCS LEAK #3 corresponds to Excavation 3. Leak 2 and Leak 4, both at 6-inch electrofusion couplings on the carrier pipe, were identified in Excavation 3.
(10) Sample ID LCS LEAK #4 corresponds to Excavation 4. Leak 3, a tear in the containment pipe, was identified in Excavation 4.
(11) There was no leak identified in Excavation 5. Soil was not sampled in Excavation 5.

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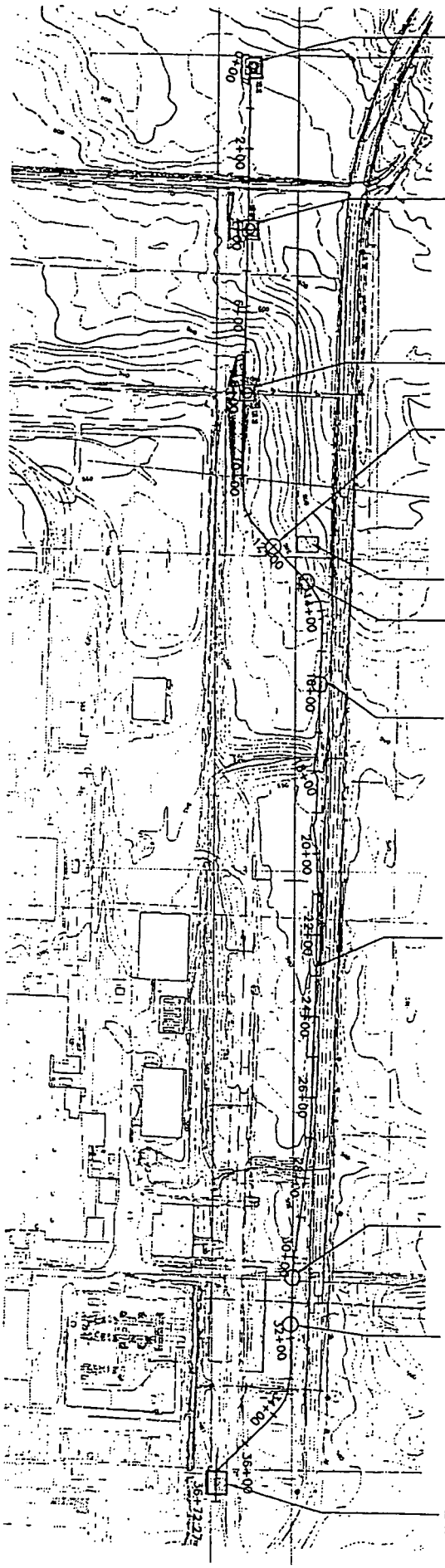

REPAIR LOCATIONS - 1999

GeoSyntec Consultants
ATLANTA, GA

PROJECT NO. G00573-3.2	FIGURE NO. 4-1
DOCUMENT NO. F9930006	FILE NO. F99-A171.DWG